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THE CONCEPT OF PARADYNAMIC LANDSCAPE SYSTEM IN GEOGRAPHY

Relevance of research. The geographical area is characterized by its polisystematicy. One of the landscape systems is paradynamic, which functionality is caused by contrast of interacting environments. The problem of landscape and ecological researches of paradynamic landscape complexes for a long time attracts the attention of scientists, researchers by its originality, complexity and specific approaches to research. Theory of paradynamic landscape complexes based on a systematic approach allows considering interacting contrasting landscape complexes as paradynamic integrated landscape system.

However, despite the actuality of the outlined problem, studies of paradynamic complex systems still remain poorly studied element of landscape and geography and environmental studies – from the formulation of terminological and conceptual apparatus to the practical use of the identified regularities and interactions. It is explained by, on the one hand, the very complex nature of the interaction between natural landscapes and their components and anthropogenic landscapes, specific interactions between contrasting environments and with other – lack of development of methodological basis of landscape and ecological researches of paradynamic landscapes. Difficulties of study of paradynamic landscapes are linked with a significant disperse of primary information regarding to the dynamics of natural and anthropogenic landscapes. Moreover, not all regions (geographical or even administrative) are covered with full-value landscape-ecological researches of paradynamic systems.

Problem statement. Dynamic principle and the principle of contrast compared to the structural principle make it possible to consider the landscape formations in the interaction of their contrasting elements. This approach opens up new possibilities and perspectives of development of the modern landscape science. The principle of environments' contrast allows combining of different in the past types of landscape studies – sea and land, mountain and plain, upland and low land and so on.

Review of recent publications. A lot of scientific papers of geologists, geomorphologists, specialists in study of landscape science, biogeographers and others are devoted to issues of interaction of contrasting landscapes environments. In geography an analysis of the concept of paradynamic landscape systems is primarily investigated by F.M. Milkov, M.D. Hrodzynskyi, H.I. Denysyk, V.M. Petlin and others. Applied questions of paradynamic landscapes' research are well covered in works of scientists of Vinnytsia University within the studies of anthropogenic landscapes in H.I. Denysyk Scientific School. However, it should be noted that in the geography the paradynamic interaction of natural and anthropogenic landscape complexes are covered less in comparison to other areas of scientific geographical researches.

The **aim of the article** is to analyze the concept of "paradynamic landscape system" in geography and landscape science. The main objective of the paper is an analysis of the concept of "paradynamic landscape system" in geography.

Statement of basic material. Paradynamic and paragenetic landscape complexes are inherently landscaped systems and the systematic approach is exactly the base that allows considering the interacting within contrasting natural environments landscaped complexes of modern geographical science.

The concept of paradynamic landscape complexes systems emerged recently in the landscape science based on the development of concept of paragenetic landscape complexes. The last is associated with geological (within its meaning) term "paragenesis", which determines the appropriate phenomenon. Paragenesis (para – near, close; genesis – the origin, appearance) from the linguistic point means: 1) phenomenon associated with the formation or occurrence; 2) in the broadest sense – the onset and subsequent development process that led to a particular class, type or phenomenon [1]. The second definition is closer in meaning to science, but does not fully disclose its nature as a scientific concept.

Often the concept of paragenesis was applied and, as the analysis of modern scientific geological sources has shown, is still used in geological sciences, particularly in mineralogy. Paragenetic principle entered into geology in 1849 after the publication of the book of August Breithaupt "Paragenesis of Minerals" in Freiberg. However, the author understood under parageneses regular common occurrence or assemblage of minerals. His ideas had been favourably received by followers, improved, mutated and eventually gained the common use at first in petrology, and later in tectonics. Based on the paragenetic principle it was formulated the concept of sedimentary and sedimentary-volcanic formations as natural complexes, aggregates or associations of rocks, some of which are closely paragenetically interrelated both in time and in space [2].

The development of geological science promoted the widening of application's field of this term to "common occurrence in the earth's crust minerals interconnected with common conditions of mineralization" [1, p. 963]. Now mineralogists under the term "mineral paragenesis" understand the natural mechanisms of minerals grouping [3].

The research of paragenesis phenomena concern not only to minerals, but also to chemical elements [4; 5; 6] and chemical agents [7; 8]. The term "paragenesis" is obtained different meanings in geomorphology, pedology and other sciences [9; 10; 11].

In landscape science O.I. Perelman was one of the first who introduced paragenetic conceptions in the determination of geochemical landscape; he named it as paragenetic association of conjugated elementary landscapes interrelated over the migration of elements [12].

Theoretical development of idea about paragenetic landscape complexes in geography belongs to F.M. Milkov [13] who determines the features of their structure and functioning based on the interaction of spatial conterminate landscape complexes of common origin. Such an approach differed from traditional landscape science, which investigated landscape complexes as isolated territorial communities. Contrasting of environments and its importance for physical geography F.M. Milkov identified later as the fundamental mechanism of geographical science [14].

In the same year he published an article about paragenetic landscape complexes [15]. In it the scientist for the first time paid the attention to existing of certain landscape systems, which components are interrelated due to common origin – so called paragenetic landscape complexes. However, in this work, as in the "Landscape sphere of the Earth" [16], the author doesn't ground in details the term, which is implemented in scientific use.

In spite of that the most of statements of F.M. Milkov's idea about the existence of peculiar landscape complexes were criticized [17], the most important remains his idea about existence in nature entire landscape complexes marked out by the principle of contrast. Before it the landscape complexes are researched on the basis of their relative relation and qualitatively heterogeneous (contrast) are not researched by their characteristics in general.

The principle of contrast was used in different times in different fields of scientific researches in landscape areas' characteristic [18], in research of principles of biogeocenosis arrangement [19], study about geochemical landscape [20] and research of geochemical contrast of landscapes by M.A. Hlazovska [21], research of active ocean surfaces [22].

F.M. Milkov in his later work [23] underscores on process constituent – matter and energy interchanges. The scientist proved that this interchange takes place due to the contrast phenomenon. Realization of first priority consideration of the process constituent in marking out the landscape systems led F.M. Milkov in 1977 to the formulation of the idea about the existence of paradynamic landscape complexes and neces-

sity of their research within the new perspective direction of landscape science [24].

Heterogeneity and contrast of environments cause the substantial intensity of interchange of matter and energy. On the basis of it F.M. Milkov derives the geographical regularity, according to which the contrast of environments is an indispensable condition of dynamics and development of landscape complexes [25].

For that very reason in considering of phenomena of paradynamic and paragenetic in landscape fields, we incline to views of F.M. Milkov, who considers them as interrelated and interdependent, but prioritizing the paradynamic based on the process constituent. The paragenetic phenomenon is a result of manifestation of either driving processes and unity of origin and, correspondingly, stands as the peculiar type of paradynamic geosystems.

In accordance to the determination of F.M. Milkov, the paradynamic landscape complex is a system of spatial conterminate regional or typological units, which are characterized by their interchange of matter and energy. At the same time the paradynamic interrelations belong to the type of horizontal intercomplex relations.

Paradynamic landscape systems are the peculiar category of landscape complexes differential from regional and typological complexes. Their research is based not on the internal structure, but the interrelation of its constituents. The landscape system should obtain higher place in the hierarchy system, because it functionally should contains the paradynamic landscape complexes.

The peculiarity of the paradynamic systems lie in that they are expressed the better and more clear, the more contrast are their constituent complexes. F.M. Milkov stressed that the natural distinctions, which led to the disjunction of regional and typological landscape complexes, are the uniting ground for the paradynamic landscape systems.

An example of such a system is sharply contrast environments closely contacted with each other – land and water within limits of shoreline (horizontal contrast) as one of the main and the most widespread limits of contrast. Till the present day in landscape science the shore and offshore strip are consider separate from each other, even in different landscapes. Meanwhile it is proved that they are in the closest interrelation by the example of their both abiotic and biotic constituents. All this results in various formations: from relief's peculiarities to elevated concentrations and aggregates of life forms.

In relation to this, it is possible to agree partially with I.V. Aharkova-Liakh, who in her dissertation has researched shore's landscape complexes of Crimea's Black Sea coast and characterized them as paragenetic [16]. Since the majority of scientists consider concentrate water flow as a basis for forming of paragenetic landscape complexes, then only transportation along a shore and currents can be the basis for shoreline's paragenesis. Nevertheless, the shore is characterized by the multitude of dynamics tranverse brace, which essentially are paradynamic (surfy transportation of derelictions, breeze circulation, stream and planar runoff and so on). In spite of this the author singles out and characterizes only paragenetic landscape complexes of shoreline on the basis of tranverse brace (those are paradynamic in fact) that is confirmed by the paper's text and schematic picture of paragenetic landscape structure of shore of the sea [26, p. 46].

The same is confirmed by researches of M. Danieva [27], who on the basis of prolonged studying and mapping of Bulgaria's Black Sea coast proposed to change the term "paragenetic landscape complex" into "paradynamic", which better correspond to their essence.

Unfortunately, all further researches of landscape complex systems concerned only to their paragenetic structure. The closest to the uncovering of paradynamic in landscape systems and the fullest determination of this notion were in the works of M.D. Hrodzynskyi [28; 29]. In spite of high significance and necessity in researches of contrast landscape complexes for modern landscape science, they have not received further development in works of specialists in study of landscape science.

Conclusions. Thus, the investigation of terminological meaning of paradynamic landscape systems is a necessary and perspective direction of fundamental investigations of landscape science. It will give the opportunity to study interrelations and interactions between contrast and qualitatively heterogeneous landscape complexes (for example, sea-land, mountains-plains and so on), which nowadays are studied insufficiently.

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